

# SOME PROBLEMS REGARDING THE INFLUENCES OF THE MATERIAL CHARACTERISTICS ON THE TEMPERATURE DISTRIBUTION IN A DISC BRAKE

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**Abstract.** *The paper continues previous researches of authors, where infrared images of brake disc were taken in real time experiments. A comparison between real results and the results obtained from finite element analyze in ABAQUS was made. It is observed that material properties of brake disc influence the thermal shock resistance. The thermograms analyze, obtained by experiments, makes possible to highlight the conductivity which has an essential influence over thermal stress.*

**Keywords:** brake disk, thermography, experimental and theoretical simulation, braking, thermal properties, cast iron

## 1. Introduction

Brake disc architecture design and optimization activities are followed by theoretical simulation and experiments based on a testing methodology with its accuracy [1].

As an example ABAQUS (as a software for finite element analyze), infrared thermal camera (as a precise experimental acquisition device of thermal distribution) and histograms of thermo grams (as a testing methodology).

Every research activity, in simulation and experiments, has the aim to study the phenomenological and analytical of braking in order to obtain new information regarding the resulting thermal energy from disc brake (figure 1 and 2).

For a high efficiency of brake disc, the resulted heat must be fast released, taking into account the cumulative rise of temperature [2], having unwanted effects over thermal stress thus resulted [3].

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